Beckhoff — AL Linear Motors

AL2009-0000-0000



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The **AL2009-0000-0000** coil unit is manufactured by Beckhoff for the AL Linear Motors series. As a moving primary section in the company's linear servo motor range, it produces direct thrust along a magnet track without requiring a rotary-to-linear conversion. It is suitable for positioning loads in gantries, pick-and-place modules, and other automated motion axes.

Under continuous operation, the winding draws **2.14 A** and delivers an air-cooled force of **300 N**; when short bursts are required, the current may rise to **13.1 A** and the thrust peaks at **675 N**. A pole pitch of **24 mm** establishes the magnetic sequence that interacts with the secondary, while nine evenly distributed coils energize the stator teeth for smooth, cogging-free motion. The EMF constant is 80.67 V/m/s, the inductance between phases measures 162 mH, and the resistance is 21.6 ?, values that determine drive voltage and current-loop tuning. A power constant of 140 N/A relates input amperage to output force, while the motor constant of 570 N^2/W relates thermal loading to force production.

An operating air gap of **0.5 mm** must be maintained to prevent collision while preserving efficient magnetic coupling. At maximum continuous load, the copper losses equal **225 W** and are conducted through the aluminum body with a thermal resistance of **0.32 °C/W**. A thermal time constant of **77 s** indicates how rapidly the winding temperature responds when airflow is impeded. The assembly weighs 2.0 kg, resists 1,325 N of magnetic attraction toward the magnet rail, and spans 80 mm in width, allowing installation in compact multi-segment arrays. The normal winding is supplied without connectors, allowing application-specific cabling to be soldered or crimped. The

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unit is intended only for air cooling and does not include a water jacket.

Specifications

Air Gap:	0.5 mm	**Coil Unit Weight:**	2.0 kg	**Connection:**	Without Connectors
Continuous Current:	2.14 A	**Continuous Force Air Cooling:**	300 N	**Continuous Power Loss:**	225 W
Magnetic Attraction Force:	1325 N	**Motor Constant:**	570 N²/W	**Num. of Coils:**	9
Peak Current:	13.1 A	**Peak Force:**	675 N	**Pole Pitch:**	24 mm
Power Constant:	140 N/A	**Product Range:**	Linear servo motors	**Thermal Resistance:**	0.32 °C/W
Thermal Time Constant:	77 s	**Voltage Constant Emf Ph-ph:**	80.67 V/m/s	**Water Cooling:**	Without Water Cooling
Width:	80 mm	**Winding:**	Normal Winding	**Winding Inductance Ph-ph:**	162 mH
Winding Resistance Ph-ph:	21.6 ?	**Last Verified:**	11/22/2026 10:40 PM		

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